



## SEQUENCE LISTING

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ROTHSTEIN, JEFFREY

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<141> 2003-11-24

<150> 60/413,152

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 195 200 205  
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 210 215 220  
 Thr Arg Ile Thr Glu Glu Leu Val Pro Val Pro Gly Ser Val Asn Gly  
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Val Asn Ala Leu Gly Leu Val Val Phe Ser Met Cys Phe Gly Phe Val  
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 Ile Gly Asn Met Lys Glu Gln Gly Gln Ala Leu Arg Glu Phe Phe Asp  
 260 265 270  
 Ser Leu Asn Glu Ala Ile Met Arg Leu Val Ala Val Ile Met Trp Tyr  
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 Ala Pro Val Gly Ile Leu Phe Leu Ile Ala Gly Lys Ile Val Glu Met  
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 Glu Asp Met Gly Val Ile Gly Gly Gln Leu Ala Met Tyr Thr Val Thr  
 305 310 320  
 Val Ile Val Gly Leu Leu Ile His Ala Val Ile Val Leu Pro Leu Leu  
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 Tyr Phe Leu Val Thr Arg Lys Asn Pro Trp Val Phe Ile Gly Gly Leu  
 340 345 350  
 Leu Gln Ala Leu Ile Thr Ala Leu Gly Thr Ser Ser Ser Ala Thr  
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 Arg Val Thr Arg Phe Val Leu Pro Val Gly Ala Thr Ile Asn Met Asp  
 385 390 395 400  
 Gly Thr Ala Leu Tyr Glu Ala Leu Ala Ala Ile Phe Ile Ala Gln Val  
 405 410 415  
 Asn Asn Phe Glu Leu Asn Phe Gly Gln Ile Ile Thr Ile Ser Ile Thr  
 420 425 430  
 Ala Thr Ala Ala Ser Ile Gly Ala Ala Gly Ile Pro Gln Ala Gly Leu  
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 Val Thr Met Val Ile Val Leu Thr Ser Val Gly Leu Pro Thr Asp Asp  
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 Ile Thr Leu Ile Ile Ala Val Asp Trp Phe Leu Asp Arg Leu Arg Thr  
 465 470 475 480  
 Thr Thr Asn Val Leu Gly Asp Ser Leu Gly Ala Gly Ile Val Glu His  
 485 490 495  
 Leu Ser Arg His Glu Leu Lys Asn Arg Asp Val Glu Met Gly Asn Ser  
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 <211> 1719  
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 <213> Homo sapiens

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Arg Ala Leu Arg Thr Arg Leu Arg Leu Gln Thr Met Thr Leu Glu His  
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Val Leu Arg Phe Leu Arg Arg Asn Ala Phe Ile Leu Leu Thr Val Ser  
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Ala Val Val Ile Gly Val Ser Leu Ala Phe Ala Leu Arg Pro Tyr Gln  
 65 70 75 80

Leu Thr Tyr Arg Gln Ile Lys Tyr Phe Ser Phe Pro Gly Glu Leu Leu  
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Met Arg Met Leu Gln Met Leu Val Leu Pro Leu Ile Val Ser Ser Leu  
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Val Thr Gly Met Ala Ser Leu Asp Asn Lys Ala Thr Gly Arg Met Gly  
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Met Arg Ala Ala Val Tyr Tyr Met Val Thr Thr Ile Ile Ala Val Phe  
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Ile Gly Ile Leu Met Val Thr Ile Ile His Pro Gly Lys Gly Ser Lys  
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Glu Gly Leu His Arg Glu Gly Arg Ile Glu Thr Ile Pro Thr Ala Asp  
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Ala Phe Met Asp Leu Ile Arg Asn Met Phe Pro Pro Asn Leu Val Glu  
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Ala Cys Phe Lys Gln Phe Lys Thr Gln Tyr Ser Thr Arg Val Val Thr  
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Arg Thr Met Val Arg Thr Glu Asn Gly Ser Glu Pro Gly Ala Ser Met  
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Pro Pro Pro Phe Ser Val Glu Asn Gly Thr Ser Phe Leu Glu Asn Val  
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Thr Arg Ala Leu Gly Thr Leu Gln Glu Met Leu Ser Phe Glu Glu Thr  
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Val Pro Val Pro Gly Ser Ala Asn Gly Ile Asn Ala Leu Gly Leu Val  
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Val Phe Ser Val Ala Phe Gly Leu Val Ile Gly Gly Met Lys His Lys  
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Gly Arg Val Leu Arg Asp Phe Phe Asp Ser Leu Asn Glu Ala Ile Met  
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Arg Leu Val Gly Ile Ile Trp Tyr Ala Pro Val Gly Ile Leu Phe  
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 Gly Gln Ile Thr Thr Ile Ser Ile Thr Ala Thr Ala Ala Ser Val Gly  
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 Asp Trp Phe Leu Asp Arg Leu Arg Thr Met Thr Asn Val Leu Gly Asp  
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 <212> DNA  
 <213> Homo sapiens

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&lt;211&gt; 560

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

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 Leu Gly Phe Phe Leu Arg Thr Arg Arg Leu Ser Pro Gln Glu Ile Ser  
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 Tyr Phe Gln Phe Pro Gly Glu Leu Leu Met Arg Met Leu Lys Met Met  
   50                   55                   60  
  
 Ile Leu Pro Leu Val Val Ser Ser Leu Met Ser Gly Leu Ala Ser Leu  
   65                   70                   75                   80  
  
 Asp Ala Lys Thr Ser Ser Arg Leu Gly Val Leu Thr Val Ala Tyr Tyr  
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 Leu Trp Thr Thr Phe Met Ala Val Ile Val Gly Ile Phe Met Val Ser  
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 Ile Ile His Pro Gly Ser Ala Ala Gln Lys Glu Thr Thr Glu Gln Ser  
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 Gly Lys Pro Ile Met Ser Ser Ala Asp Ala Leu Leu Asp Leu Ile Arg  
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 Asn Met Phe Pro Ala Asn Leu Val Glu Ala Thr Phe Lys Gln Tyr Arg  
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 Thr Lys Thr Thr Pro Val Val Lys Ser Pro Lys Val Ala Pro Glu Glu  
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 Ser His Val Gln Asn Phe Ala Leu Asp Leu Thr Pro Pro Pro Glu Val  
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 Val Tyr Lys Ser Glu Pro Gly Thr Ser Asp Gly Met Asn Val Leu Gly  
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 Val Met Lys Ile Val Ala Val Ala Val Trp Tyr Phe Pro Phe Gly Ile  
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 Val Leu His Gly Leu Phe Ile Leu Pro Leu Leu Tyr Phe Phe Ile Thr  
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 Lys Cys Leu Leu Glu Asn Asn His Ile Asp Arg Arg Ile Ala Arg Phe  
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 Val Leu Pro Val Gly Ala Thr Ile Asn Met Asp Gly Thr Ala Leu Tyr  
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 Glu Ala Val Ala Ala Ile Phe Ile Ala Gln Val Asn Asn Tyr Glu Leu  
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 Val Leu Thr Ser Val Gly Leu Pro Thr Asp Asp Ile Thr Leu Ile Ile  
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 Pro Val Ser Leu Gln Glu Ile Val Ala Ala Gln Gln Asn Gly Cys Val  
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 Lys Ser Val Ala Glu Ala Ser Glu Leu Thr Leu Gly Pro Thr Cys Pro  
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<212> DNA
<213> Homo sapiens
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Val Ser Gly Asp Thr Ile Leu Phe Asp Glu Asn Gly Asp Ser Pro Gly  
 450 455 460

Arg Tyr Glu Ile Met Asn Phe Lys Glu Met Gly Lys Asp Tyr Phe Asp  
 465 470 475 480

Tyr Ile Asn Val Gly Ser Trp Asp Asn Gly Glu Leu Lys Met Asp Asp  
 485 490 495

Asp Glu Val Trp Ser Lys Lys Ser Asn Ile Ile Arg Ser Val Cys Ser  
 500 505 510

Glu Pro Cys Glu Lys Gly Gln Ile Lys Val Ile Arg Lys Gly Glu Val  
 515 520 525  
 Ser Cys Cys Trp Thr Cys Thr Pro Cys Lys Glu Asn Glu Tyr Val Phe  
 530 535 540  
 Asp Glu Tyr Thr Cys Lys Ala Cys Gln Leu Gly Ser Trp Pro Thr Asp  
 545 550 555 560  
 Asp Leu Thr Gly Cys Asp Leu Ile Pro Val Gln Tyr Leu Arg Trp Gly  
 565 570 575  
 Asp Pro Glu Pro Ile Ala Ala Val Val Phe Ala Cys Leu Gly Leu Leu  
 580 585 590  
 Ala Thr Leu Phe Val Thr Val Val Phe Ile Ile Tyr Arg Asp Thr Pro  
 595 600 605  
 Val Val Lys Ser Ser Ser Arg Glu Leu Cys Tyr Ile Ile Leu Ala Gly  
 610 615 620  
 Ile Cys Leu Gly Tyr Leu Cys Thr Phe Cys Leu Ile Ala Lys Pro Lys  
 625 630 635 640  
 Gln Ile Tyr Cys Tyr Leu Gln Arg Ile Gly Ile Gly Leu Ser Pro Ala  
 645 650 655  
 Met Ser Tyr Ser Ala Leu Val Thr Lys Thr Asn Arg Ile Ala Arg Ile  
 660 665 670  
 Leu Ala Gly Ser Lys Lys Lys Ile Cys Thr Lys Lys Pro Arg Phe Met  
 675 680 685  
 Ser Ala Cys Ala Gln Leu Val Ile Ala Phe Ile Leu Ile Cys Ile Gln  
 690 695 700  
 Leu Gly Ile Ile Val Ala Leu Phe Ile Met Glu Pro Pro Asp Ile Met  
 705 710 715 720  
 His Asp Tyr Pro Ser Ile Arg Glu Val Tyr Leu Ile Cys Asn Thr Thr  
 725 730 735  
 Asn Leu Gly Val Val Thr Pro Leu Gly Tyr Asn Gly Leu Leu Ile Leu  
 740 745 750  
 Ser Cys Thr Phe Tyr Ala Phe Lys Thr Arg Asn Val Pro Ala Asn Phe  
 755 760 765  
 Asn Glu Ala Lys Tyr Ile Ala Phe Thr Met Tyr Thr Thr Cys Ile Ile  
 770 775 780  
 Trp Leu Ala Phe Val Pro Ile Tyr Phe Gly Ser Asn Tyr Lys Ile Ile  
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Thr Met Cys Phe Ser Val Ser Leu Ser Ala Thr Val Ala Leu Gly Cys  
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Met Phe Val Pro Lys Val Tyr Ile Ile Leu Ala Lys Pro Glu Arg Asn  
 820 825 830

Val Arg Ser Ala Phe Thr Thr Ser Thr Val Val Arg Met His Val Gly  
 835 840 845

Asp Gly Lys Ser Ser Ser Ala Ala Ser Arg Ser Ser Ser Leu Val Asn  
 850 855 860

Leu Trp Lys Arg Arg Gly Ser Ser Gly Glu Thr Leu Ser Ser Asn Gly  
 865 870 875 880

Lys Ser Val Thr Trp Ala Gln Asn Glu Lys Ser Ser Arg Gly Gln His  
 885 890 895

Leu Trp Gln Arg Leu Ser Ile His Ile Asn Lys Lys Glu Asn Pro Asn  
 900 905 910

Gln Thr Ala Val Ile Lys Pro Phe Pro Lys Ser Thr Glu Ser Arg Gly  
 915 920 925

Leu Gly Ala Gly Ala Gly Ala Gly Gly Ser Ala Gly Gly Val Gly Ala  
 930 935 940

Thr Gly Gly Ala Gly Cys Ala Gly Ala Gly Pro Gly Gly Pro Glu Ser  
 945 950 955 960

Pro Asp Ala Gly Pro Lys Ala Leu Tyr Asp Val Ala Glu Ala Glu Glu  
 965 970 975

His Phe Pro Ala Pro Ala Arg Pro Arg Ser Pro Ser Pro Ile Ser Thr  
 980 985 990

Leu Ser His Arg Ala Gly Ser Ala Ser Arg Thr Asp Asp Asp Val Pro  
 995 1000 1005

Ser Leu His Ser Glu Pro Val Ala Arg Ser Ser Ser Ser Gln Gly Ser  
 1010 1015 1020

Leu Met Glu Gln Ile Ser Ser Val Val Thr Arg Phe Thr Ala Asn Ile  
 1025 1030 1035 1040

Ser Glu Leu Asn Ser Met Met Leu Ser Thr Ala Ala Pro Ser Pro Gly  
 1045 1050 1055

Val Gly Ala Pro Leu Cys Ser Ser Tyr Leu Ile Pro Lys Glu Ile Gln  
 1060 1065 1070

Leu Pro Thr Thr Met Thr Thr Phe Ala Glu Ile Gln Pro Leu Pro Ala  
 1075 1080 1085

Ile Glu Val Thr Gly Gly Ala Gln Pro Ala Ala Gly Ala Gln Ala Ala  
 1090 1095 1100

Gly Asp Ala Ala Arg Glu Ser Pro Ala Ala Gly Pro Glu Ala Ala Ala  
 1105 1110 1115 1120

Ala Lys Pro Asp Leu Glu Glu Leu Val Ala Leu Thr Pro Pro Ser Pro  
 1125 1130 1135

Phe Arg Asp Ser Val Asp Ser Gly Ser Thr Thr Pro Asn Ser Pro Val  
 1140 1145 1150

Ser Glu Ser Ala Leu Cys Ile Pro Ser Ser Pro Lys Tyr Asp Thr Leu  
 1155 1160 1165

Ile Ile Arg Asp Tyr Thr Gln Ser Ser Ser Ser Leu  
 1170 1175 1180

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 <211> 2621  
 <212> DNA  
 <213> Homo sapiens

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 tgcaccagaa gggcgccca gcagaggact gtggtcctgt caatgagcac cgtggcatcc 180  
 agcgcctgga ggcacatgtt tttgcactgg accgcataa ccgtgaccccg cacctgctgc 240  
 ctggcgtgcg cctgggtgca cacatcctcg acagttgctc caaggacaca catgcgctgg 300  
 agcaggcact ggactttgtg cgtgcctcac tcagccgtgg tgctgatgga tcacgcccaca 360  
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 tggagagtgt ggtggcaggc agtgagggggg ctgctgaggg tgctatcacc atcgagctgg 960  
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 gcagtgagcc ctgcctccag aatgaggtga agagtgtgca gcccggcgaa gtctgctgct 1560  
 ggctctgcat tccgtgccag ccctatgagt accgatttggc cgaatttact tgcgttgcatt 1620  
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 ccttcatctt cattgccaag ccatccacgg cagtgtgtac cttacggcgt cttggttgg 1920  
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 tcagcggctc cgtggctt ggctgcctt ttgcgcccgg gctgcacatc atcctcttcc 2460  
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 ccagggccag ctccagcctt ggccaaagggt ctggctccca gtttgccttcc actgtttgca 2580  
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<210> 18  
 <211> 872  
 <212> PRT  
 <213> Homo sapiens

<400> 18  
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 Val Leu Gly Gly Leu Phe Pro Val His Gln Lys Gly Gly Pro Ala Glu  
 35 40 45  
 Asp Cys Gly Pro Val Asn Glu His Arg Gly Ile Gln Arg Leu Glu Ala  
 50 55 60  
 Met Leu Phe Ala Leu Asp Arg Ile Asn Arg Asp Pro His Leu Leu Pro  
 65 70 75 80  
 Gly Val Arg Leu Gly Ala His Ile Leu Asp Ser Cys Ser Lys Asp Thr  
 85 90 95  
 His Ala Leu Glu Gln Ala Leu Asp Phe Val Arg Ala Ser Leu Ser Arg  
 100 105 110  
 Gly Ala Asp Gly Ser Arg His Ile Cys Pro Asp Gly Ser Tyr Ala Thr  
 115 120 125  
 His Gly Asp Ala Pro Thr Ala Ile Thr Gly Val Ile Gly Gly Ser Tyr  
 130 135 140  
 Ser Asp Val Ser Ile Gln Val Ala Asn Leu Leu Arg Leu Phe Gln Ile  
 145 150 155 160

Pro Gln Ile Ser Tyr Ala Ser Thr Ser Ala Lys Leu Ser Asp Lys Ser  
 165 170 175  
 Arg Tyr Asp Tyr Phe Ala Arg Thr Val Pro Pro Asp Phe Phe Gln Ala  
 180 185 190  
 Lys Ala Met Ala Glu Ile Leu Arg Phe Phe Asn Trp Thr Tyr Val Ser  
 195 200 205  
 Thr Glu Ala Ser Glu Gly Asp Tyr Gly Glu Thr Gly Ile Glu Ala Phe  
 210 215 220  
 Glu Leu Glu Ala Arg Ala Arg Asn Ile Cys Val Ala Thr Ser Glu Lys  
 225 230 235 240  
 Val Gly Arg Ala Met Ser Arg Ala Ala Phe Glu Gly Val Val Arg Ala  
 245 250 255  
 Leu Leu Gln Lys Pro Ser Ala Arg Val Ala Val Leu Phe Thr Arg Ser  
 260 265 270  
 Glu Asp Ala Arg Glu Leu Leu Ala Ala Ser Gln Arg Leu Asn Ala Ser  
 275 280 285  
 Phe Thr Trp Val Ala Ser Asp Gly Trp Gly Ala Leu Glu Ser Val Val  
 290 295 300  
 Ala Gly Ser Glu Gly Ala Ala Glu Gly Ala Ile Thr Ile Glu Leu Ala  
 305 310 315 320  
 Ser Tyr Pro Ile Ser Asp Phe Ala Ser Tyr Phe Gln Ser Leu Asp Pro  
 325 330 335  
 Trp Asn Asn Ser Arg Asn Pro Trp Phe Arg Glu Phe Trp Glu Gln Arg  
 340 345 350  
 Phe Arg Cys Ser Phe Arg Gln Arg Asp Cys Ala Ala His Ser Leu Arg  
 355 360 365  
 Ala Val Pro Phe Glu Gln Glu Ser Lys Ile Met Phe Val Val Asn Ala  
 370 375 380  
 Val Tyr Ala Met Ala His Ala Leu His Asn Met His Arg Ala Leu Cys  
 385 390 395 400  
 Pro Asn Thr Thr Arg Leu Cys Asp Ala Met Arg Pro Val Asn Gly Arg  
 405 410 415  
 Arg Leu Tyr Lys Asp Phe Val Leu Asn Val Lys Phe Asp Ala Pro Phe  
 420 425 430  
 Arg Pro Ala Asp Thr His Asn Glu Val Arg Phe Asp Arg Phe Gly Asp  
 435 440 445

Gly Ile Gly Arg Tyr Asn Ile Phe Thr Tyr Leu Arg Ala Gly Ser Gly  
 450 455 460  
 Arg Tyr Arg Tyr Gln Lys Val Gly Tyr Trp Ala Glu Gly Leu Thr Leu  
 465 470 475 480  
 Asp Thr Ser Leu Ile Pro Trp Ala Ser Pro Ser Ala Gly Pro Leu Ala  
 485 490 495  
 Ala Ser Arg Cys Ser Glu Pro Cys Leu Gln Asn Glu Val Lys Ser Val  
 500 505 510  
 Gln Pro Gly Glu Val Cys Cys Trp Leu Cys Ile Pro Cys Gln Pro Tyr  
 515 520 525  
 Glu Tyr Arg Leu Asp Glu Phe Thr Cys Ala Asp Cys Gly Leu Gly Tyr  
 530 535 540  
 Trp Pro Asn Ala Ser Leu Thr Gly Cys Phe Glu Leu Pro Gln Glu Tyr  
 545 550 555 560  
 Ile Arg Trp Gly Asp Ala Trp Ala Val Gly Pro Val Thr Ile Ala Cys  
 565 570 575  
 Leu Gly Ala Leu Ala Thr Leu Phe Val Leu Gly Val Phe Val Arg His  
 580 585 590  
 Asn Ala Thr Pro Val Val Lys Ala Ser Gly Arg Glu Leu Cys Tyr Ile  
 595 600 605  
 Leu Leu Gly Gly Val Phe Leu Cys Tyr Cys Met Thr Phe Ile Phe Ile  
 610 615 620  
 Ala Lys Pro Ser Thr Ala Val Cys Thr Leu Arg Arg Leu Gly Leu Gly  
 625 630 635 640  
 Thr Ala Phe Ser Val Cys Tyr Ser Ala Leu Leu Thr Lys Thr Asn Arg  
 645 650 655  
 Ile Ala Arg Ile Phe Gly Gly Ala Arg Glu Gly Ala Gln Arg Pro Arg  
 660 665 670  
 Phe Ile Ser Pro Ala Ser Gln Val Ala Ile Cys Leu Ala Leu Ile Ser  
 675 680 685  
 Gly Gln Leu Leu Ile Val Val Ala Trp Leu Val Val Glu Ala Pro Gly  
 690 695 700  
 Thr Gly Lys Glu Thr Ala Pro Glu Arg Arg Glu Val Val Thr Leu Arg  
 705 710 715 720  
 Cys Asn His Arg Asp Ala Ser Met Leu Gly Ser Leu Ala Tyr Asn Val  
 725 730 735

Leu Leu Ile Ala Leu Cys Thr Leu Tyr Ala Phe Asn Thr Arg Lys Cys  
 740 745 750  
 Pro Glu Asn Phe Asn Glu Ala Lys Phe Ile Gly Phe Thr Met Tyr Thr  
 755 760 765  
 Thr Cys Ile Ile Trp Leu Ala Leu Leu Pro Ile Phe Tyr Val Thr Ser  
 770 775 780  
 Ser Asp Tyr Arg Val Gln Thr Thr Met Cys Val Ser Val Ser Leu  
 785 790 795 800  
 Ser Gly Ser Val Val Leu Gly Cys Leu Phe Ala Pro Lys Leu His Ile  
 805 810 815  
 Ile Leu Phe Gln Pro Gln Lys Asn Val Val Ser His Arg Ala Pro Thr  
 820 825 830  
 Ser Arg Phe Gly Ser Ala Ala Arg Ala Ser Ser Ser Leu Gly Gln  
 835 840 845  
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 850 855 860  
 Val Asp Ser Thr Thr Ser Ser Leu  
 865 870

<210> 19  
 <211> 4260  
 <212> DNA  
 <213> Homo sapiens

<400> 19  
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 agagctttaa agttgagacc gcccaccctcc ctaccggcccc atgccttc acccactcc 240  
 gaaattcacc gaccttgca tgcactgcct aaggattca gagtgaggca aagcagtcgg 300  
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 cgttttccccca ctccccactg actcgatgc ctggatgttc tgccacccggc cagtggtcca 720  
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 aattttgtga caggctctgt tagtctgttc ctcccttatt tgaaggacag gccaaagatc 1020  
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 agtacagaaa acaggattca tgaagatgtt gacaagactg caagttctta ccttagctt 1140  
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aatagaaggt gaccttgttt tagggggcct gtttcttatt aacgaaaaaag gcactggAAC 1260  
 tgaagaatgt gggcgaatca atgaagaccc agggattcaa cgcctggAG ccatgttGTT 1320  
 tgctattgtat gaaatcaaca aagatgatta cttgtacca ggagtgaAGt tgggtgttca 1380  
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 ggcattttg acaaaagtgg atgaagctGA gtatatgtgt cctgtatggat cctatGCCat 1500  
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 aaaaaaaaaa aaaacaaaaa aaaaaaaaaa aaagaaaaaa ataaaaatac ggtggcaata 4080  
 ttatgttaacc tttttccta tgaagtttt tggatgttcc tggatgtact aatttaggat 4140  
 gagtttctat gttgtatatt aaagttacat tatgtgtaaAC agattgattt tctcagcaca 4200  
 aaataaaaaaAG catctgtatt aatgtaaAG tactgagaat aaaaccttca aggtttcca 4260

<210> 20  
 <211> 879  
 <212> PRT  
 <213> Homo sapiens

<400> 20  
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 Lys Gly Phe Leu Leu Ser Leu Gly Asp His Asn Phe Leu Arg Arg Glu  
   20                   25                           30  
 Ile Lys Ile Glu Gly Asp Leu Val Leu Gly Gly Leu Phe Pro Ile Asn  
   35                   40                           45  
 Glu Lys Gly Thr Gly Thr Glu Glu Cys Gly Arg Ile Asn Glu Asp Arg  
   50                   55                           60  
 Gly Ile Gln Arg Leu Glu Ala Met Leu Phe Ala Ile Asp Glu Ile Asn  
   65                   70                           75                           80  
 Lys Asp Asp Tyr Leu Leu Pro Gly Val Lys Leu Gly Val His Ile Leu  
   85                           90                                   95  
 Asp Thr Cys Ser Arg Asp Thr Tyr Ala Leu Glu Gln Ser Leu Glu Phe  
   100                           105                           110  
 Val Arg Ala Ser Leu Thr Lys Val Asp Glu Ala Glu Tyr Met Cys Pro  
   115                           120                           125  
 Asp Gly Ser Tyr Ala Ile Gln Glu Asn Ile Pro Leu Leu Ile Ala Gly  
   130                           135                           140  
 Val Ile Gly Gly Ser Tyr Ser Ser Val Ser Ile Gln Val Ala Asn Leu  
   145                           150                           155                           160  
 Leu Arg Leu Phe Gln Ile Pro Gln Ile Ser Tyr Ala Ser Thr Ser Ala  
   165                           170                                   175  
 Lys Leu Ser Asp Lys Ser Arg Tyr Asp Tyr Phe Ala Arg Thr Val Pro  
   180                           185                           190  
 Pro Asp Phe Tyr Gln Ala Lys Ala Met Ala Glu Ile Leu Arg Phe Phe  
   195                           200                           205  
 Asn Trp Thr Tyr Val Ser Thr Val Ala Ser Glu Gly Asp Tyr Gly Glu  
   210                           215                           220  
 Thr Gly Ile Glu Ala Phe Glu Gln Glu Ala Arg Leu Arg Asn Ile Cys  
   225                           230                           235                           240  
 Ile Ala Thr Ala Glu Lys Val Gly Arg Ser Asn Ile Arg Lys Ser Tyr  
   245                           250                                   255

Asp Ser Val Ile Arg Glu Leu Leu Gln Lys Pro Asn Ala Arg Val Val  
 260 265 270  
 Val Leu Phe Met Arg Ser Asp Asp Ser Arg Glu Leu Ile Ala Ala Ala  
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 atgagttaa gtgcttgcgtt atctctgggc atgcttgcata tggccaaagggtt ttatattata 2580  
 atttttcatc cagaacagaa tggatgttgc caacgttccat cttaccaagac aacatataatc 2640  
 gtcggccacca tgcaaaagca actgatccaa aaaggaaaatg acagacccaa tggcgaggtt 2700  
 aaaagtgaac tctgtgagag tcttggaaacc aacacttccat cttaccaagac aacatataatc 2760  
 agttacagca atcattcaat ctgaaaacagg gaaatggcactt aatctgttgc gacgtggat 2820  
 atgatcttgc atgatgttgc aaaaatttgc tggatgttgc aaaaatttgc tccgttagact 2880

acaatcaatc aaatcaatag tcagtcttgt aaggaacaaa aattagccat gagccaaaag 2940  
 tatcaataaa cggggagtga agaaacccgt tttatacat aaaaaccaatg agtgtcaagc 3000  
 taaagtattg cttattcatg agcagttaaa acaaatcaca aaaggaaaac taatgttagc 3060  
 tcgtaaaaaa aatgctgtt aaataaataa tgtctgatgt tattcttgc ttttctgtg 3120  
 attgtgagaa ctcccggtcc tgtcccacat tgtttaactt gtataagaca atgagtctgt 3180  
 ttcttgtaat ggctgaccag attgaagccc tgggttgc taaaaataaa tgcaatgatt 3240  
 gatgcatgca atttttata caaataattt atttctaata ataaaggaat gtttgcaaa 3300  
 aaaaaaaaaaa aaaaactcga g 3321

&lt;210&gt; 28

&lt;211&gt; 908

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 28

Met	Val	Cys	Glu	Gly	Lys	Arg	Ser	Ala	Ser	Cys	Pro	Cys	Phe	Phe	Leu
1															15

Leu	Thr	Ala	Lys	Phe	Tyr	Trp	Ile	Leu	Thr	Met	Met	Gln	Arg	Thr	His
															30
20								25							

Ser	Gln	Glu	Tyr	Ala	His	Ser	Ile	Arg	Val	Asp	Gly	Asp	Ile	Ile	Leu
															45
35						40									

Gly	Gly	Leu	Phe	Pro	Val	His	Ala	Lys	Gly	Glu	Arg	Gly	Val	Pro	Cys
															60
50						55									

Gly	Glu	Leu	Lys	Lys	Glu	Lys	Gly	Ile	His	Arg	Gly	Glu	Ala	Met	Leu
															80
65					70				75						

Tyr	Ala	Ile	Asp	Gln	Ile	Asn	Lys	Asp	Pro	Asp	Leu	Leu	Ser	Asn	Ile
															95
85								90							

Thr	Leu	Gly	Val	Arg	Ile	Leu	Asp	Thr	Cys	Ser	Arg	Asp	Thr	Tyr	Ala
															110
100								105							

Leu	Glu	Gln	Ser	Leu	Thr	Phe	Val	Gln	Ala	Leu	Ile	Glu	Lys	Asp	Ala
															125
115								120							

Ser	Asp	Val	Lys	Cys	Ala	Asn	Gly	Asp	Pro	Pro	Ile	Phe	Thr	Lys	Pro
															140
130								135							

Asp	Lys	Ile	Ser	Gly	Val	Ile	Gly	Ala	Ala	Ala	Ser	Ser	Val	Ser	Ile
															160
145					150				155						

Met	Val	Ala	Asn	Ile	Leu	Arg	Leu	Phe	Lys	Ile	Pro	Gln	Ile	Ser	Tyr
															175
165								170							

Ala	Ser	Thr	Ala	Pro	Glu	Leu	Ser	Asp	Asn	Thr	Arg	Tyr	Asp	Phe	Phe
															190
180								185							

Ser	Arg	Val	Val	Pro	Pro	Asp	Ser	Tyr	Gln	Ala	Gln	Ala	Met	Val	Asp
															205
195								200					205		

Ile Val Thr Ala Leu Gly Trp Asn Tyr Val Ser Thr Leu Ala Ser Glu  
 210 215 220  
 Gly Asn Tyr Gly Glu Ser Gly Val Glu Ala Phe Thr Gln Ile Ser Arg  
 225 230 235 240  
 Glu Ile Gly Gly Val Cys Ile Ala Gln Ser Gln Lys Ile Pro Arg Glu  
 245 250 255  
 Pro Arg Pro Gly Glu Phe Glu Lys Ile Ile Lys Arg Leu Leu Glu Thr  
 260 265 270  
 Pro Asn Ala Arg Ala Val Ile Met Phe Ala Asn Glu Asp Asp Ile Arg  
 275 280 285  
 Arg Ile Leu Glu Ala Ala Lys Lys Leu Asn Gln Ser Gly His Phe Leu  
 290 295 300  
 Trp Ile Gly Ser Asp Ser Trp Gly Ser Lys Ile Ala Pro Val Tyr Gln  
 305 310 315 320  
 Gln Glu Glu Ile Ala Glu Gly Ala Val Thr Ile Leu Pro Lys Arg Ala  
 325 330 335  
 Ser Ile Asp Gly Phe Asp Arg Tyr Phe Arg Ser Arg Thr Leu Ala Asn  
 340 345 350  
 Asn Arg Arg Asn Val Trp Phe Ala Glu Phe Trp Glu Glu Asn Phe Gly  
 355 360 365  
 Cys Lys Leu Gly Ser His Gly Lys Arg Asn Ser His Ile Lys Lys Cys  
 370 375 380  
 Thr Gly Leu Glu Arg Ile Ala Arg Asp Ser Ser Tyr Glu Gln Glu Gly  
 385 390 395 400  
 Lys Val Gln Phe Val Ile Asp Ala Val Tyr Ser Met Ala Tyr Ala Leu  
 405 410 415  
 His Asn Met His Lys Asp Leu Cys Pro Gly Tyr Ile Gly Leu Cys Pro  
 420 425 430  
 Arg Met Ser Thr Ile Asp Gly Lys Glu Leu Leu Gly Tyr Ile Arg Ala  
 435 440 445  
 Val Asn Phe Asn Gly Ser Ala Gly Thr Pro Val Thr Phe Asn Glu Asn  
 450 455 460  
 Gly Asp Ala Pro Gly Arg Tyr Asp Ile Phe Gln Tyr Gln Ile Thr Asn  
 465 470 475 480  
 Lys Ser Thr Glu Tyr Lys Val Ile Gly His Trp Thr Asn Gln Leu His  
 485 490 495

Leu Lys Val Glu Asp Met Gln Trp Ala His Arg Glu His Thr His Pro  
 500 505 510  
 Ala Ser Val Cys Ser Leu Pro Cys Lys Pro Gly Glu Arg Lys Lys Thr  
 515 520 525  
 Val Lys Gly Val Pro Cys Cys Trp His Cys Glu Arg Cys Glu Gly Tyr  
 530 535 540  
 Asn Tyr Gln Val Asp Glu Leu Ser Cys Glu Leu Cys Pro Leu Asp Gln  
 545 550 555 560  
 Arg Pro Asn Met Asn Arg Thr Gly Cys Gln Leu Ile Pro Ile Ile Lys  
 565 570 575  
 Leu Glu Trp His Ser Pro Trp Ala Val Val Pro Val Phe Val Ala Ile  
 580 585 590  
 Leu Gly Ile Ile Ala Thr Thr Phe Val Ile Val Thr Phe Val Arg Tyr  
 595 600 605  
 Asn Asp Thr Pro Ile Val Arg Ala Ser Gly Arg Glu Leu Ser Tyr Val  
 610 615 620  
 Leu Leu Thr Gly Ile Phe Leu Cys Tyr Ser Ile Thr Phe Leu Met Ile  
 625 630 635 640  
 Ala Ala Pro Asp Thr Ile Ile Cys Ser Phe Arg Arg Val Phe Leu Gly  
 645 650 655  
 Leu Gly Met Cys Phe Ser Tyr Ala Ala Leu Leu Thr Lys Thr Asn Arg  
 660 665 670  
 Ile His Arg Ile Phe Glu Gln Gly Lys Lys Ser Val Thr Ala Pro Lys  
 675 680 685  
 Phe Ile Ser Pro Ala Ser Gln Leu Val Ile Thr Phe Ser Leu Ile Ser  
 690 695 700  
 Val Gln Leu Leu Gly Val Phe Val Trp Phe Val Val Asp Pro Pro His  
 705 710 715 720  
 Ile Ile Ile Asp Tyr Gly Glu Gln Arg Thr Leu Asp Pro Glu Lys Ala  
 725 730 735  
 Arg Gly Val Leu Lys Cys Asp Ile Ser Asp Leu Ser Leu Ile Cys Ser  
 740 745 750  
 Leu Gly Tyr Ser Ile Leu Leu Met Val Thr Cys Thr Val Tyr Ala Asn  
 755 760 765  
 Lys Thr Arg Gly Val Pro Glu Thr Phe Asn Glu Ala Lys Pro Ile Gly  
 770 775 780

Phe Thr Met Tyr Thr Thr Cys Ile Ile Trp Leu Ala Phe Ile Pro Ile  
 785 790 795 800  
 Phe Phe Gly Thr Ala Gln Ser Ala Glu Lys Met Tyr Ile Gln Thr Thr  
 805 810 815  
 Thr Leu Thr Val Ser Met Ser Leu Ser Ala Ser Val Ser Leu Gly Met  
 820 825 830  
 Leu Tyr Met Pro Lys Val Tyr Ile Ile Ile Phe His Pro Glu Gln Asn  
 835 840 845  
 Val Gln Lys Arg Lys Arg Ser Phe Lys Ala Val Val Thr Ala Ala Thr  
 850 855 860  
 Met Gln Ser Lys Leu Ile Gln Lys Gly Asn Asp Arg Pro Asn Gly Glu  
 865 870 875 880  
 Val Lys Ser Glu Leu Cys Glu Ser Leu Glu Thr Asn Thr Ser Ser Thr  
 885 890 895  
 Lys Thr Thr Tyr Ile Ser Tyr Ser Asn His Ser Ile  
 900 905

<210> 29  
 <211> 499  
 <212> DNA  
 <213> Rattus sp.

<400> 29  
 aaaaggcaaa ttactgtatt tttatggcag gaagaagaaa aagtgttcaa acggtttctg 60  
 acgaagtctag gtatTTaaat ggtgaatgac gatgtgttag tggagatgaa atgaaccaat 120  
 aaatgattga ttgtcattta tgcaggaaaa taatgctcct tttcaatata actaaacaga 180  
 gactaattta taagtgcTTT attgaaaaat acacatattt tcataaaaa ttacagtgc 240  
 ggtacgaaga ggttctacg tactttgcac agcactctgg tggccagtgc caggctgtag 300  
 gttgtcagct gggctttgg agcggtatga agtcacctag taactttgtt tacagtgatc 360  
 caatTTaaat tgaatTTct ccttaggatt attaatccaa cttaaaaaat tacttgataa 420  
 taatgattaa taaagatatg tgtagataat caatagctat taaatcttct aatttgtgtc 480  
 aatggtagca tgtactaat 499

<210> 30  
 <211> 1401  
 <212> DNA  
 <213> Rattus sp.

<400> 30  
 atgcaagagg tggggtctct gcaggggtca cagttccctt cactgaccac cagtctgggg 60  
 cattgtctgt cctcacagac agcttgtat aagagtgttc ctgtccccac agcacgttt 120  
 ctggagcagt tgaaggctga gtgtcaactac gtcaagggga gggagcatgt gtggagcgtg 180  
 accagattca tctataacca ggaagagttt gcccgcTTT acagtgtctt tgggaagttc 240  
 ctggcagtga ctgagctggg gccccata gctgagttact tgaacaccca gaaggacatg 300

ctggacaatt accgtgcctc tgtggacagg tgcagaaata actatgacct ggttcatatc 360  
 ttcatgtcga acttaaaaagc taaaacccaaag gtgaccgtgt acccttcaaa gacgcagccc 420  
 ctggaataacc acaacccctt ggtctgtct gtgagtgact tctaccctgg caccattgaa 480  
 atcagatggt tccggaatgg tgaggaggaa aagactggag tcgtgtccac cgacacgtac 540  
 tctaattggag actggaccta ccagaccctg gtgatgtctgg agacggttcc tcaggggtgga 600  
 gaggtttaca cctgccaggt ggagcatccc agcctgacca gcccgtcag agtggagtgg 660  
 agggctcgat ccacatctgc acagaacaag atgctgagcg gagccatggg catggcgcta 720  
 ggtctgttca tcctcgcggt ggggctgttc atctacttaa ggaatctgag agaggcttcc 780  
 ctggacaaag agctgtacta ccatggggaa cccctcaatg tcaacgtcca cgtcaccaac 840  
 aattctgcca agaccgtcaa gaagatcaga gtgtctgtga gacagtatgc cgacatggc 900  
 ctcttcagca ctgcgcagta caagtgtcct gtggctcagc ttgaacaaga tgaccaggtg 960  
 tctcccagtt ccacattctg caaggtgtac accataaccc cgctgctcag tgacaaccga 1020  
 gagaagctgt gccttgcct tcatgggcag ctcaagcagc aagacaccaa cctggcttcc 1080  
 agcaccattg tgaaggaggg agccaacaag gaggtgctgg gaatcctagt atcctacagg 1140  
 gtcaaggtga agctgtgtt gtctcgaggg gggatgtct ccgtggagct acctttcgtc 1200  
 ctaatgcacc ccaagccccca cgaccacatc acccttcccc gaccccgatc agccccccgg 1260  
 gaaatagaca tccctgtgga taccaaccc attgaattcg ataccaacta tgccacagac 1320  
 gacgacatcg tggggatggg ctttgcgcgg ctggctga agggatgaa ggtgacgac 1380  
 tgtatgacc agttctgcta g 1401

<210> 31  
 <211> 466  
 <212> PRT  
 <213> Rattus sp.

<400> 31  
 Met Gln Glu Val Gly Ser Leu Gln Val Ser Gln Phe Pro Ser Leu Thr  
 1 5 10 15  
 Thr Ser Leu Gly His Cys Leu Ser Ser Gln Thr Ala Cys Asn Lys Ser  
 20 25 30  
 Val Pro Val Pro Thr Ala Arg Phe Leu Glu Gln Leu Lys Ala Glu Cys  
 35 40 45  
 His Tyr Val Lys Gly Arg Glu His Val Trp Ser Val Thr Arg Phe Ile  
 50 55 60  
 Tyr Asn Gln Glu Glu Phe Ala Arg Phe Asp Ser Val Phe Gly Lys Phe  
 65 70 75 80  
 Leu Ala Val Thr Glu Leu Gly Arg Pro Ile Ala Glu Tyr Leu Asn Thr  
 85 90 95  
 Gln Lys Asp Met Leu Asp Asn Tyr Arg Ala Ser Val Asp Arg Cys Arg  
 100 105 110  
 Asn Asn Tyr Asp Leu Val Asp Ile Phe Met Ser Asn Leu Lys Ala Lys  
 115 120 125  
 Pro Lys Val Thr Val Tyr Pro Ser Lys Thr Gln Pro Leu Glu Tyr His  
 130 135 140

Asn Leu Leu Val Cys Ser Val Ser Asp Phe Tyr Pro Gly Thr Ile Glu  
 145 150 155 160

Ile Arg Trp Phe Arg Asn Gly Glu Glu Lys Thr Gly Val Val Ser  
 165 170 175

Thr Asp Leu Ile Ser Asn Gly Asp Trp Thr Tyr Gln Thr Leu Val Met  
 180 185 190

Leu Glu Thr Val Pro Gln Gly Gly Glu Val Tyr Thr Cys Gln Val Glu  
 195 200 205

His Pro Ser Leu Thr Ser Pro Val Arg Val Glu Trp Arg Ala Arg Ser  
 210 215 220

Thr Ser Ala Gln Asn Lys Met Leu Ser Gly Ala Met Gly Met Ala Leu  
 225 230 235 240

Gly Leu Phe Ile Leu Ala Val Gly Leu Phe Ile Tyr Leu Arg Asn Leu  
 245 250 255

Arg Glu Ala Ser Leu Asp Lys Glu Leu Tyr Tyr His Gly Glu Pro Leu  
 260 265 270

Asn Val Asn Val His Val Thr Asn Asn Ser Ala Lys Thr Val Lys Lys  
 275 280 285

Ile Arg Val Ser Val Arg Gln Tyr Ala Asp Ile Cys Leu Phe Ser Thr  
 290 295 300

Ala Gln Tyr Lys Cys Pro Val Ala Gln Leu Glu Gln Asp Asp Gln Val  
 305 310 315 320

Ser Pro Ser Ser Thr Phe Cys Lys Val Tyr Thr Ile Thr Pro Leu Leu  
 325 330 335

Ser Asp Asn Arg Glu Lys Arg Gly Leu Ala Leu Asp Gly Gln Leu Lys  
 340 345 350

His Glu Asp Thr Asn Leu Ala Ser Ser Thr Ile Val Lys Glu Gly Ala  
 355 360 365

Asn Lys Glu Val Leu Gly Ile Leu Val Ser Tyr Arg Val Lys Val Lys  
 370 375 380

Leu Val Val Ser Arg Gly Gly Asp Val Ser Val Glu Leu Pro Phe Val  
 385 390 395 400

Leu Met His Pro Lys Pro His Asp His Ile Thr Leu Pro Arg Pro Gln  
 405 410 415

Ser Ala Pro Arg Glu Ile Asp Ile Pro Val Asp Thr Asn Leu Ile Glu  
 420 425 430

Phe Asp Thr Asn Tyr Ala Thr Asp Asp Asp Ile Val Phe Glu Asp Phe  
435 440 445

Ala Arg Leu Arg Leu Lys Gly Met Lys Asp Asp Asp Cys Asp Asp Gln  
450 455 460

Phe Cys  
465

<210> 32  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 32  
gagcattggc gcagccagta 20

<210> 33  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 33  
gtctgagaac aagacaaagg 20

<210> 34  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 34  
ggtagaagcc tgctttaaac 20

<210> 35  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 primer

<400> 35  
 ccaaggttct tcctcaacac

20

<210> 36  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 primer

<400> 36  
 tgagagctgt caggagagc

19

<210> 37  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 primer

<400> 37  
 ggcatgaatg aggaggccga c

21

<210> 38  
 <211> 39  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 primer

<400> 38  
 tatttaggtg acactatagg agcattggtg cagccagta

39

<210> 39  
 <211> 39  
 <212> DNA  
 <213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 39
tat taggtg acactatagg tctgagaaca agacaaagg 39

<210> 40
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 40
tat taggtg acactatagg gtagaaggct gctttaaac 39

<210> 41
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 41
taatacgact cactataggg gccaaaggttc ttccctcaac 39

<210> 42
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 42
taatacgact cactataggg gtgagagctg tcaggagagc 40

<210> 43
<211> 42
<212> DNA
<213> Artificial Sequence

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<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 43  
taatacgact cactataggg gggcatgaat gaggaggccg ac 42

<210> 44  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 44  
gagctggaca ccattgactc 20

<210> 45  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 45  
gactgcgtct tggtcatttc 20

<210> 46  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 46  
caacaccgaa tgcacgaaga catc 24

<210> 47  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 47  
atgagtgcaa ggtaactctg g

21

<210> 48  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 48  
tcacgttcc aaggttcttc

20

<210> 49  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 49  
ccaatggaaa gtcagctgac tgca

24